
Configuring Quadro with Broadvox



Revision: 3.0

Abstract: This document describes how to configure the Quadro to use the IP-PSTN service from Broadvox.

Document Revision History

Revision	Date	Description	Valid for SW	Valid for models
2.0	01-Apr-2011	Initial release	5.2.x	Quadro IP PBXs
3.0	31-Oct-2013	Updated	5.3.x	Quadro IP PBXs

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1 Introduction

This document describes how to configure the Quadro to use the IP-PSTN service from the Broadvox SIP Server. The Quadro IP PBX is capable of making IP-PSTN calls via the Broadvox SIP Server. This solution allows Quadro IP PBX users to make cost-saving calls to global destinations.

Please note: Security issues and rates are beyond the scope of this document.

2 Scenario

Provider: Broadvox SIP Server.

- Broadvox SIP Server offers outbound and inbound calls.
- Broadvox SIP Server allows parallel outbound calls to be made from one account.
- Broadvox SIP Server allows parallel calls to be received to one account.

Customer:

- The customer will be making PSTN calls through the Broadvox SIP Server.

2.1 Requirements and Preparations

- The Quadro IP PBX is connected to the network and all network settings are properly configured.
- The Quadro IP PBX is running software 5.3.x or higher.

2.2 Account Information from Broadvox

Broadvox SIP Server will provide the customer with the following data:

- Service Address: sample.broadvox.net (sample)
- Account number: 4690000106 (sample)
- Password: *****
- Telephone Number (DID): 4690000116 (BTN) (sample)

3 Configuration

The sections below describe the configurations required on the Quadro to allow the users to

- Make outgoing calls through the Broadvox SIP Server.
- Receive incoming calls through the Broadvox SIP Server.

3.1 Making Outgoing Calls through Broadvox

First of all, the provided account should be registered. For creating a new extension and registering it on the Broadvox SIP Server, go to **Telephony→VoIP Carrier Wizard** page, pass through this wizard and enter the following parameters:

- VoIP Carrier – Broadvox;
- Description – Broadvox;
- Press **Next** (Figure 1).

Figure 1- VoIP Carrier Wizard- Page 1

In the next opened page, enter the following parameters:

- **Account Name** – 4690000106;
- Put provided password in the **Password** and **Confirm Password** fields;
- **SIP Server** – sample.broadvox.net;
- **SIP Server Port** – 5060;
- Press **Next** (Figure 2).

VoIP Carrier Wizard

VoIP Carrier Settings

VoIP Carrier Common Settings

Account Name:

Password:

Confirm Password:

SIP Server:

SIP Server Port:

VoIP Carrier Advanced Settings

☒ Use RTP Proxy

Authentication User Name:

☐ Send Keep-alive Messages to Proxy

Timeout: sec

Outbound Proxy

Host Address:

Port:

Secondary SIP Server

Host Address:

Port:

Outbound Proxy for Secondary SIP Server

Host Address:

Port:

Please check your pending events!

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Figure 2 - VoIP Carrier Wizard- Page 2

On the third page of VoIP Carrier Wizard, you can define the Access Code which will be used in the Call Routing Table. Let's say it is 01. You can also define the extension, on which you will receive the incoming calls from Broadvox SIP Server. Let's say it is 102 (you can also receive the incoming calls from Broadvox SIP Server on Quadro Auto Attendant – extension 00).

- **Access Code** - 01;
- **Emergency Code** – leave the default value or put your country emergency call;
- **Route Incoming Calls to** – 102;

If you want the calls to failover to the onboard FXO line, you can enable the **Failover to PSTN** service and press the **Next** button (Figure 3).

MainSystemUsersConferencesTelephonyInternet UplinkNetwork

epygi[®]
quadrom

VoIP Carrier Wizard

VoIP Carrier Access Code

Access code:

☒ By prefix:

☐ By pattern:

Emergency Code: 1

Route Incoming Calls to:

▼

☐ Failover to PSTN

Previous

Next

Cancel

Help

1 - WARNING: if this ITSP is 911 compliant then you have to bind this account with the geographical address of your device. If the ITSP is not 911 compliant then the public safety agency will not be able to determine the address automatically.

[Please check your pending events!](#)

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Figure 3 - VoIP Carrier Wizard- Page 3

Confirm entered settings on the last page of VoIP Carrier Wizard page and press the **Finish** (Figure 4).



Main System Users Conferences Telephony Internet Uplink Network

VoIP Carrier Wizard

VoIP Carrier Summary

VoIP Carrier: Broadvox
 Description: Broadvox

VoIP Carrier Common Settings

Account Name: 4690000106
 SIP Server: sample.broadvox.net
 SIP Server Port: 5060

VoIP Carrier Advanced Settings

Use RTP Proxy: Yes
 Authentication User Name:
 Send Keep-alive Messages to Proxy: No

VoIP Carrier Access Code

Access Code: 01*
 Emergency Code:
 Route Incoming Calls to: 102
 Failover to PSTN: No

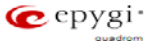
Previous Finish Cancel Help

Please check your pending events!
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Figure 4 - VoIP Carrier Wizard- Page 4

Now the provided account is registered, and you can make outgoing calls through Broadvox SIP Server using 01 prefix (appropriate **Call Routing rule** with **01*** pattern is automatically added on the **Call Routing table** – see Figure 5).

Main
System
Users
Conferences
Telephony
Internet Uplink
Network



Call Routing Table

Show Detailed View>>>
Hide disabled records

Enable	Disable	Add	Edit	Duplicate	Delete	Select all	Inverse Selection	Move Up	Move Down	Move To									
	1	Enabled	92*								NDS: 1	E1/T1 Trunk1, Timeslots: 1-15,17-31	Any	No	*	PBX	10	Make PSTN Call	
	2	Enabled	8*								NDS: 1	SIP sip.epygi.com	None	No			URP: Yes	10	Make SIP call
	3	Enabled	00									PBX	None	No			URP: No	10	Call To Attendant
	4	Enabled	???									PBX	None	No			URP: No	10	Call to Extensions
	5	Enabled	7*								NDS: 1	SIP sip.epygi.loc:5060	None	No			URP: Yes	10	Make SIP call
	6	Enabled	75166*								NDS: 5	SIP 192.168.75.166:5060	None	No			URP: No	10	
	7	Enabled	1234								NDS: 4 Prefix: 999	PBX	None	No			URP: No	10	
	8	Invalid	74222*								NDS: 2	E1/T1 Trunk1, Timeslots: 1-15,17-31	None	No				10	
	9	Enabled	01*								NDS: 2	IP-PSTN sample.broadvox.net:5060, RNSC: No	None	No	*	PBX	UES: 999 URP: Yes	10	Broadvox

NDS
- Number of Discarded Symbols

UES
- Use Extension Settings

RNSC
- Restrict the Number of Simultaneous Calls

URP
- Use RTP Proxy

AAA
- Authentication, Authorization, Accounting

Back

Help

Please check your pending events!
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Figure 5 - Call Routing Table page

3.2 Receiving Inbound Calls from Broadvox

You have two ways to allow long distance calls to be received from Broadvox SIP Server.

1. First one is already done. For receiving incoming calls from Broadvox SIP Server, you already created the needed configuration during the **VoIP Carrier Wizard**, so now you can receive all incoming calls to DID number 4690000106 from Broadvox SIP Server on extension 102 (Figure 6).

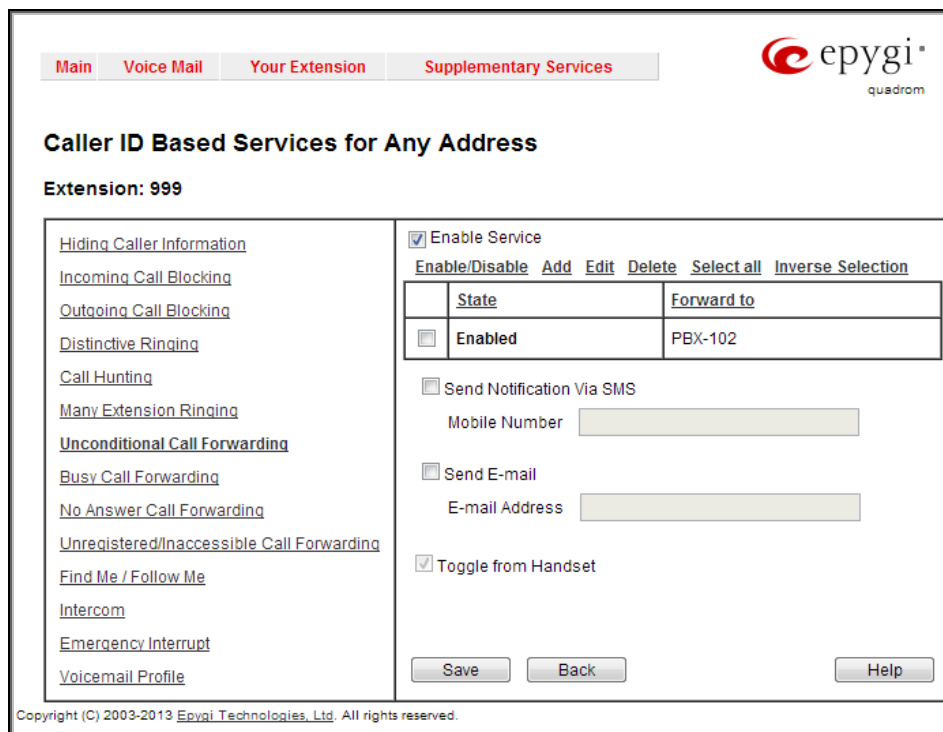


Figure 6 - Unconditional Call Forwarding page

2. Second one can be used when the provided account does not have a registration possibility, or a range of DIDs is provided for the extensions. User should create a Call Routing rule on the Quadro that will route calls from Broadvox SIP Server to an Auto Attendant or an extension. In this configuration example, extension 102 will be used for this purpose.

The appropriate Call Routing rule should be matched with provided DIDs (example 4690000116). This Call Routing rule can be general for all DID's or be separate of each one. In our sample we will create the general rule.

To add an appropriate rule to the Call Routing, go to **Telephony→Call Routing** page and press the **Add** button. The **Call Routing Wizard** appears. Insert the following settings (see Figure 8):

- **Destination Number Pattern** – for example 4690000116 (this pattern should match provided DIDs);
- **Number of Discarded Symbols** – 10 (all digits in the incoming Caller ID will be discarded);
- **Prefix** – enter needed extension number as a prefix (in our case it is 102).
- **Destination Type** as *PBX*;
- Disable **Filter on Source/Modify Caller ID** service and press the **Next** button.

- Proceed to the end of the Call Routing Wizard by leaving other settings unchanged and finish the wizard.
- Go back to **Telephony**→**Call Routing** and enable the **Route all incoming SIP calls to Call Routing** checkbox.

Now the Quadro user can receive incoming calls from Broadvox SIP Services on extension 102.

To create separate rules for each DID number you just need to put an appropriate DID number in the **Destination Number Pattern** field and discard 10 digits.

How the rule works: Inbound calls matching the pattern '4690000116' will be forwarded to extension 102.

Figure 7 - Call Routing Wizard page

4 Additional Notes

4.1 Sending Music on Hold to Remote Parties

Each extension of the Quadro IP PBX can be configured to send its own hold music to remote parties on hold (PSTN, IP, or IP-PSTN destinations). While sending the extensions' music on hold (MOH) to PSTN parties does not require any configuration on the Quadro, certain configurations are needed when the remote party is an IP or IP-PSTN destination. The following steps describe how to configure an extension to send its own MOH to remote IP parties:

1. Login to the Quadro as an extension user.
2. Open the **Supplementary Services→Basic Services→Hold Music Settings** page (see Figure 8)
3. Select the **Send Hold Music to remote IP party** checkbox and press **Save**.

Figure 8 - Basic Services – Hold Music Settings page

If the Quadro is configured with an ITSP that does not support remote MOH (the ITSP closes the received audio stream when receiving an SIP re-INVITE message with the c=IN IP4 0.0.0.0, a=sendonly media attributes), please follow these steps to complete the configuration:

1. Log into the Quadro as an administrator.
2. Type "generalconfig.cgi" in the address field of the browser to open the **General Configuration** page (see Figure 9).
3. On this page, select the **Force Hold Music** checkbox and click **Save**.

General Configuration

Max Number of Records in DB cache: 32 recs

DNS cache MAX size: 32 recs

DNS cache cleanup timeout: 8 hours

Flash timeout: 2 sec

Call progress notification timeout: 10 sec

IP line registration timeout maximum: 3600 sec

IP line registration timeout minimum: 120 sec

Play user friendly voice messages instead of tones: default

IP phones settings

SIP registration timeout: 3600 sec

SIP subscription timeout: 3600 sec

SIP session refresh timeout: 600 sec

☐ Monitoring SIP registration for E1/T1 link

Trunk: 0 Extension: 00

☐ Monitoring Server Status for E1/T1 link

Trunk: 0

URI:

Server:

Port: 5060

Timeout: 60 sec

Templates for Caller ID ¹

IP call: %a (%a%d%u%h)

PBX call: %a (%a%d%u)

PSTN call: %a (%a%d%u)

Presence ²

Subscription limitation: 1000

☒ Enable VM silence disconnect

Disconnect timeout: 5

VM Session timeout: 60 sec

[Please check your pending events!](#)

1 - %a - automatically, %d - display name, %u - user name or phone number, %h - host name or IP address
2 - Warning: The device should be rebooted manually to apply changed value of this field. Increasing this value can bring instability of this device.
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Figure 9 - General Configuration page

Please note: Please inform your system administrator before making any other changes on this page.

4.2 Sending and Receiving Faxes through Broadvox

To send a FAX connect the FAX machine to one of FXS ports and enable **T.38 FAX** and **Enable Pass Through FAX** options in the codecs' list for the corresponding extension.

For receiving FAX from Broadvox SIP Server you can use the configuration already created during the VoIP Carrier Wizard. After the additional configuration steps described below you will receive FAX on the FAX machine attached to extension 102:

1. Choose the **Users→Extensions Management** page (see Figure 10).
2. On the **Extensions Management** page, click on the **Codecs** link of *extension 102*.
3. On the **Extension Codecs** page select the **Enable T.38 FAX** and **Enable Pass Through FAX** checkboxes (see Figure 11).
4. Press **Save**.

Extensions Management

[Add](#) [Edit](#) [Delete](#) [Select all](#) [Inverse Selection](#) [Hide extensions attached to disabled IP lines](#) [Use Epygi SIP server](#)

Extension	Display Name	Attached Line	SIP Address	Percentage of System Memory	External Access	Codecs
<input type="checkbox"/> 00	Attendant		741800@sip.epygi.loc:5060	3% (8 hour 10 min 29 sec)		PCMU.....
<input type="checkbox"/> 101	101	Line 1	7418101@sip.epygi.loc:5060	0.5% (1 hour 21 min 45 sec)	None	PCMU.....
<input type="checkbox"/> 102	FAX	Line 2	7418102@sip.epygi.loc:5060	0.5% (1 hour 21 min 45 sec)	None	PCMU.....
<input type="checkbox"/> 103	third Line	IP Line 1	7418103@sip.epygi.loc:5060	1% (2 hour 43 min 30 sec)	None	PCMU.....
<input type="checkbox"/> 104		IP Line 2	7418104@sip.epygi.loc:5060	0.2% (32 min 42 sec)	None	PCMU.....
<input type="checkbox"/> 105		IP Line 3	7418105@sip.epygi.loc:5060	0.2% (32 min 42 sec)	None	PCMU.....
<input type="checkbox"/> 106		IP Line 4	7418106@sip.epygi.loc:5060	0.2% (32 min 42 sec)	None	PCMU.....
<input type="checkbox"/> 107		IP Line 5	7418107@sip.epygi.loc:5060	0.5% (1 hour 21 min 45 sec)	None	PCMU.....

[Upload Universal Extension Recordings](#)
[Add Multiple Extensions](#)

[Back](#) [Help](#)

Please check your pending events!

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Figure 10 - Extension Management page

Extension 102 Codecs

[Enable/Disable](#) [Select all](#) [Inverse Selection](#) [Move Up](#) [Move Down](#) [Make preferred](#)

Audio Codecs	State
<input type="checkbox"/> G.711u (PCM audio coding standard, 8 kHz sample rate, 8 bits, 64 kbit/s data rate) (preferred)	Enabled
<input type="checkbox"/> G.711a (PCM audio coding standard, 8 kHz sample rate, 8 bits, 64 kbit/s data rate)	Enabled
<input type="checkbox"/> G.729a (CS-ACELP speech coding at 8 kbit/s rate)	Enabled
<input type="checkbox"/> G.726-16 (ADPCM speech coding at 16 kbit/s rate)	Disabled
<input type="checkbox"/> G.726-24 (ADPCM speech coding at 24 kbit/s rate)	Disabled
<input type="checkbox"/> G.726-32 (ADPCM speech coding at 32 kbit/s rate)	Disabled
<input type="checkbox"/> G.726-40 (ADPCM speech coding at 40 kbit/s rate)	Disabled
<input type="checkbox"/> iLBC (internet Low Bit Rate Coder at 13,33 kbit/s rate)	Disabled
<input type="checkbox"/> G.722 (HD audio coding at 48-64 kbit/s data rate, 16 kHz sample rate)	Disabled
<input type="checkbox"/> G.722.1 (HD audio coding at 24-32 kbit/s data rate, 16 kHz sample rate)	Disabled
<input type="checkbox"/> TDVC (Time Domain Voicing Cutoff at 1,95 kbit/s rate)	Disabled
Video Codecs	State
<input type="checkbox"/> H.263 (Video coding for low bit rate communication)	Disabled
<input type="checkbox"/> H.264 (Advanced video coding for low bit rate communication)	Disabled
<input type="checkbox"/> H.263+ (Video coding for low bit rate communication)	Disabled

☒ Out of Band DTMF Transport
☒ Enable T.38 FAX
☒ Enable Pass Through FAX
☐ Enable Pass Through Modem
☐ Force Self Codecs Preference for Inbound Calls

Secure RTP Settings
 SRTP Policy: [▼](#)

[Save](#) [Back](#)

Please check your pending events!

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Figure 11 - Codecs page for extension 102

These are another configuration options for receiving FAX messages on the Quadro:

- Incoming calls are routed directly to the extension with FAX machine attached. A special DID number is dedicated for that extension in this case;
- Incoming calls are routed to the Auto Attendant with FAX forwarding enabled to the appropriate extension. Pressing START on Auto Attendant greeting message will forward call to the predefined FAX extension;

Quadro allows receiving FAX messages as a TIFF file into the extension's voice mailbox in case if there is no FAX machine attached to the extension. In this case the following should be configured on that extension:

- The voice mail service should be enabled;
- Enough memory space should be allocated for storing incoming faxes;
- The **No answer timeout** should be set to its min value;
- The **Enable T.38 FAX** and **Enable Pass Through FAX** services for that extension should be enabled as well.

Please note: In all scenarios the **Enable T.38 FAX** and **Enable Pass Through FAX** checkboxes should be selected for the FAX extension.

5 References

The following documents can be helpful for further configuration of the Quadro IP PBX. They can be downloaded from Epygi's WEB portal at www.epygi.com:

- Quadro Manual I – Installation Guide
- Quadro Manual II – Administrator's Guide
- Preventing Unauthorized Calls on the Quadro
- User Access Privileges on the Quadro
- Quadro with generic IP-PSTN service

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